



Australian Academy of Science

SUBMISSION TO THE

**REEF 2050 CUMULATIVE IMPACT  
MANAGEMENT AND NET BENEFIT  
POLICIES PUBLIC CONSULTATION**

**FROM THE AUSTRALIAN ACADEMY OF SCIENCE / AUGUST 2017**

# Australian Academy of Science Submission on the draft Reef 2050 Plan's Cumulative Impact Management and Net Benefit policies

## Summary and Recommendations

The Australian Academy of Science welcomes the opportunity to comment on the draft Cumulative Impact Management and Net Benefit policies and congratulates the Commonwealth and Queensland governments on the decision to accelerate the revision of the 2050 Plan in response to the unprecedented impacts of the back-to-back bleaching on the Great Barrier Reef.

The Academy is pleased to recommend revisions and process considerations that would clarify and strengthen both policies, and strengthen their alignment with existing scientific knowledge. In summary:

- Recommendation 1.** The Academy suggests that finalisation of both policies should be coordinated with the imminent revision of the 2050 Plan to ensure consistency.
- Recommendation 2.** The Academy recommends that the Great Barrier Reef Outlook Reports are not appropriate for use as a guide to the types and levels of risks from drivers, pressures and activities (described in the foundational policy statements of both policies). It recommends instead that consideration be given to development of policy documentation that better describes the impact of human activities that harm the Reef, drawing on existing peer-reviewed literature.
- Recommendation 3.** The Academy recommends that greater focus should be given in both policies to irreversible impacts.

In relation to the Cumulative Impact Management policy, the Academy welcomes its base in evidence and strong foundational policy statements. However, it notes that:

- Recommendation 4.** In places, the policy confuses cumulative and multiple impacts. The Academy recommends clarification in a number of places, as described in detail in this submission.

**Recommendation 5.** The Academy welcomes the addition of a Definitions section, and suggests inclusion of a definition for Offset, as well as revision of the definitions of Adaptive Capacity, Resilience and Net Benefit.

The Academy has greater concerns about the Net Benefit Policy and Review. In particular, the Academy notes that it has not been shown that environmental damage to the reef can be offset through other measures, and is concerned that the literature review focuses on a selective review of countries that have moved away from the precautionary principle rather than a comprehensive review of scientific literature.

The Academy therefore recommends that:

**Recommendation 6.** On the basis of existing knowledge, the policy should be revised to emphasise the mitigation of threats wherever possible before resorting to offset of damage

**Recommendation 7.** That drivers, pressures and impacts should be monitored at all spatial and time scales, and that

**Recommendation 8.** Consideration should be given to providing greater opportunities for consultation with the scientific community to ensure policy development, implementation and review harnesses contemporary thinking and existing knowledge regarding cumulative impacts and other critical components of effective management of the Reef.

### [About the Academy of Science](#)

The Academy promotes scientific excellence, disseminates scientific knowledge, and provides independent scientific advice for to key decision makers in government and industry. The Academy is made up of over 500 Fellows, each elected for their outstanding contribution to science. The Academy has drawn widely on the expertise of its distinguished Fellows with expertise in coral reef science, environmental policy, conservation planning, earth sciences, climate change, and threatened species to prepare this submission. These experts would be pleased to provide further information or explanation of this submission to the Commonwealth and Queensland governments, and to contribute to addressing the challenges of governance and management of the Great Barrier Reef Marine Park and World Heritage Area.

## Overview

The overarching vision of the 2050 Reef Sustainability Plan is to improve the Outstanding Universal Value of the Reef every decade between now and 2050. This vision is sadly no longer possible given the unprecedented severity of sea surface temperatures in 2016 and 2017 that bleached close to two-thirds of the shallow-water corals in the central and northern Great Barrier Reef. The Academy concludes that as a consequence of extreme weather events, it is highly unlikely that the Great Barrier Reef will return to its condition of 1981, when it was inscribed as a World Heritage Area. The goal therefore should be to sustain a functioning reef into the future, recognising that the Great Barrier Reef in a warmer world will be different from the recent past (Hughes, et al. 2017, Hoegh-Golberg 2012). As such, the Academy welcomes the decision by the Commonwealth and Queensland governments to accelerate the revision of the 2050 Plan, and to develop policies that support its implementation.

The Academy considers that the draft Cumulative Impact Management Policy is a step towards tackling a challenging management issue. Overall, however, the Academy has concerns regarding how this policy could be implemented without a substantially increased effort in monitoring both pressures and impacts at all spatial and time scales. The Academy also considers that there are significant limitations in the Net Benefit Policy and the associated literature review lacks a foundation in scientific evidence.

Specifically, while both draft policies correctly recognise that climate change, poor water quality, and their interactions are key issues for the Great Barrier Reef, the Academy notes that more needs to be done to meet greenhouse gas emissions reduction targets, due in part to a continuing reliance on fossil fuels for energy and transport (Commonwealth of Australia 2017). During its 41<sup>st</sup> session the World Heritage Committee adopted a decision to *“strongly invite all State Parties... to address Climate Change under the Paris Agreement at their earliest possible opportunity.....consistent with their obligations within the World Heritage Convention to protect the Outstanding Universal Value of all World Heritage properties”* (World Heritage Committee 2017). The Academy notes this is the first time that the World Heritage Committee has explicitly linked stewardship of World Heritage Areas with nations’ policies for mitigation of greenhouse gas emissions.

The Academy also notes that the World Heritage Centre’s 2017 assessment of Australia’s progress on implementing the 2050 Plan, their conclusion that *“progress towards achieving water quality targets has been slow, and the most immediate water quality targets set out in the 2050 Plan are not expected to be achieved within the foreseeable future”* is of concern.

Therefore, while the draft policies provide an opportunity to address the interactive effects of climate change with water quality and other drivers on the condition of the Great Barrier

Reef, the Academy submits that this approach will fail without an overall reduction in the set of drivers listed in Attachment 1 and 2 of the draft Cumulative Impact Management and Net Benefit policies, respectively, is essential (Hughes, et al. 2017). The drivers that must be reduced include major development in the catchment area, dredging, shipping and greenhouse gas emissions. This needs to be achieved through the imminent review of the 2050 Plan and other Australian Government policy levers (e.g. for climate mitigation) in order to sustain the condition of the Great Barrier Reef at a meaningful scale.

### Feedback common to both policies

The Academy has reservations about using the Great Barrier Reef Outlook Report “*as a guide to the types and levels of risks from drivers, pressures and activities*” (described in the foundational policy statements of both policies). Previous Reports in 2009 and 2014 have not done this consistently, focussing more on the actual condition of the Reef rather than the interacting drivers causing ongoing degradation. Many of the drivers affecting the Great Barrier Reef are external to the Marine Park (e.g. port activities, coastal development, mining, agricultural runoff), and the existing Outlook reports lack substantive details on them. Accordingly, the Academy is supportive of developing much better documentation of human activities that harm the Reef and harnessing the substantial peer-reviewed literature that already exists (Uthicke, et al. 2016).

Irreversible impacts are not sufficiently discussed in either policy, despite having significant relevance. A greater emphasis in both policies should be given to irreversible impacts. It should reflect irreversible impacts that have already happened at much broader scales, e.g. the decline in certain megafauna, loss of coastal reefs, and the loss of long-lived corals in the 2016 and 2017 bleaching events (Hughes, et al. 2017). These have important implications for the revision of the 2050 Plan and for the validity of the Net Benefit concept.

### Draft Cumulative Impact Management Policy

The Cumulative Impact Management Policy attempts to address a challenging environmental management issue. Broadly, it has a good base in evidence and is guided by strong foundational policy statements. The Academy particularly welcomes the statement “Greater reductions in threats at all levels are required to improve the condition of the values [of the Great Barrier Reef] and build resilience” (p5). The scale, diversity, and complexity of the Great Barrier Reef, its pressures and associated impacts, will make the application of this policy challenging (Uthicke, et al. 2016).

The interactions of multiple pressures (especially those defined as chronic) are poorly characterised. The opening section of the policy does not address or acknowledge that that multiple drivers (“impacts”) on ecosystems typically accumulate, and compound each other,

potentially producing irreversible effects or ongoing chronic impacts (Humanes, et al. 2017). Instead, there is a confusing statement (p2), for which there is no scientific evidence, that *“small positive actions can have a cumulative impact on the reef”*. The Academy is concerned that the policy is confusing ‘cumulative impacts’ with ‘multiple impacts’. A more realistic account of cumulative impacts is not provided until p10.

The development of foundational policy statements (p7-8) is a good addition. In particular, the principle of “maximizing avoidance of impact” is consistent with legal obligations under the 1976 Great Barrier Reef Marine Park Act. The Academy also supports the need to specify spatial and time scales, under “taking a systems perspective”, and “using the best available information” (p7).

The Definitions section is a helpful addition to the policy. The Academy suggests revising the definitions of Adaptive Capacity and of Resilience, which could be better stated. The inclusion of a definition for Offset would be helpful. The definition of Net Benefit is contestable: *“A decision or action which results in a net improvement to the condition and/or trend of a Great Barrier Reef value or process...”* The Academy is unaware of any empirical example or scientific evidence for a net benefit occurring anywhere on the Great Barrier Reef.

The Academy is concerned about the wording and accuracy of some claims. The statement that *“The Reef 2050 Plan provides an overarching strategy for long-term management of the Great Barrier Reef, including cumulative impacts”* (p5) is incorrect. The statement would be true if targets in the Plan for one type of driver (such as water quality) were contingent on the level of another (such as climate change or fishing). This is not currently the case, since virtually all of the Plan’s existing targets focus on water quality. The Plan does mention cumulative impacts, but there are no associated actions that address this issue, such as the combined impacts of water quality and climate change.

The following specific comments are provided for consideration:

- The relevance of Figure 1 and the wording of the Assessing Vulnerability and Resilience statement should be clarified.
- Accountability for achieving outcomes (p8) also occurs through oversight from UNESCO and the World Heritage Committee.
- The third bullet point on p14 mentions tools for understanding cause and effect, more detail would be useful.
- The final sentence on p9 should be reworded for clarity.
- The statements on implementation and review of the policy (p15) could be usefully expanded to provide more detail. A timeline for implementation might also be included.

- Figure A2.1 in Attachment 2 should be reviewed. It confuses return times with likelihood. For example, the likelihood of coral bleaching in the next 10-100 years is certain, and certainly not “unlikely”.
- Attachment 3, Table A31. The table (p28-32) on conditions would be improved by the addition of their scores, based on the 2015 Strategic Assessment Report.

## Net Benefit Policy and Review

The Academy has concerns about the validity of the review. Principally the review does not fully assess the peer-reviewed literature. Rather it provides a limited summary of government policies from a handful of countries, a potential consequence of which could be promulgation of a mindset that allows environmental damage to proceed so long as a hypothetical net benefit from offsets is eventually achieved. The review ignores a substantial body of peer reviewed literature that rigorously examines the limitations of offsets. The review also downplays the poor and declining condition of the Great Barrier Reef. In an October 2014 submission on the Draft Reef 2050 Long Term Sustainability Plan, the Academy supported sentiments in the draft plan that resorting to environmental offsets should be avoided wherever possible. We wrote *“Offsets are incompatible with maintaining or rebuilding integrity, because by definition they allow damage at one or more locations. Even if it were possible to create a so-called net benefit elsewhere, integrity of the Great Barrier Reef region will be compromised by the growing practice of offsetting environmental damage rather than prevention or mitigation.”*

The basic premise of the review is provided in the concept diagram on the cover, which does not stand scrutiny. The axes are condition of the Great Barrier Reef (e.g. as described in the Outlook Reports) versus an unspecified time-scale. The trajectory begins with a decline, due to the “residual impact” of a human activity that is “unavoidable”. The evidence for such declines is well established in the scientific literature. Then the condition of the Reef returns to normal, at a rate equal to the decline. There is scant scientific evidence for such recoveries. The concept diagram then switches to a dotted line, to indicate a “net benefit” as the Reef improves even more.

The Academy considers that this theoretical framework oversimplifies challenges to reversing declining conditions of the Great Barrier Reef, and rejects the hypothesis that net benefits can be achieved as the framework suggests. The Academy notes that the literature review or policy provides no scientific evidence to support it.

As such, The Academy questions the whether the Net Benefit Policy adheres to its own foundational policy statements of maximising avoidance of impact, specifying spatial and time scales, and using the best available information.

## Conclusion

The stated purpose of the draft Cumulative Impact Management Policy is to manage and reduce cumulative impacts on the Great Barrier Reef (p4). However, the Academy notes that cumulative impacts are increasing, not declining. For example, the 2015 Water Quality Report Card, delivered moderate to very poor grades (Great Barrier Reef Marine Park Authority; Queensland Government; 2016). Australia's emissions of greenhouse gases remain high, as do recreational fishing pressure, pesticide use, shipping, etc. Consideration of the Cumulative Impact Management Policy should be coordinated with that of the imminent revision of the 2050 Plan and other relevant government policy levers, and not as separate exercises.

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